# USER GUIDE

## HDMI TO SD-SDI / HD-SDI / 3G-SDI

CONVERTING HDMI TO SD/HD/3G VIDEO

MODEL NO.

PRO-HDMI2HD

MADE IN TAWIAN

81-9059-0709-0, Rev. A
September 1, 2012

www.pesa.com
Phone: 256.726.9200

# Thank You.

Thank you for purchasing your new PESA video processing equipment. We appreciate your confidence in our products. PESA produces quality, state-of-the-art equipment designed to deliver our users the highest degree of performance, dependability and versatility available anywhere. We want you to know that if you ever have a concern or problem with a PESA product, we have a team of engineers, technicians and customer service professionals available 24/7/365 to help resolve the issue.

Our commitment is to continue earning the trust and confidence of our customers throughout the industry by incorporating cutting-edge technology into the highest quality, most cost effective products on the market. And we would like to invite you to tell us how we're doing. If you have any comments or suggestions concerning your PESA equipment, please contact our Customer Service Department.

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# IMPORTANT SAFETY INSTRUCTIONS

1. Read, keep, and follow these instructions.
2. Heed all warnings.
3. Installation and servicing should only be done by qualified service personnel and conform to all local codes.

**WARNING:**

1. To reduce the risk of fire or electric shock, do not expose this unit to rain or moisture.
2. This unit is designed for indoor use only and it must not be installed where exposed to rain or moisture.
3. Do not expose this unit to dripping or splashing. Do not place objects filled with liquids, such as vases, on this unit.
4. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
5. Do not install near any heat source.
6. Only use attachments/accessories specified by the manufacturer.
7. Clean only with dry cloth.
8. Do not defeat the safety purpose of the polarized or grounding-type plug.
9. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the unit.

**SERVICE INFORMATION (QUALIFIED PERSONNEL ONLY):**

1. Please thoroughly familiarize yourself with the information in this manual prior to installation and operation.
2. Only use replacement parts recommended by PESA.
3. After replacement/repair of this unit's electrical components, conduct a resistance measurement between line and exposed parts to verify the exposed parts have not been connected to line circuitry.

# LIMITATION OF LIABILITY

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# ORDER INFORMATION - HDMI CONVERTER

The **PRO-HDMI2HD** is a module for converting HDMI to 3G/HD/SD-SDI in real time. The conversion between HDMI and SDI is pure digital and guarantees zero-loss transformation for both audio and video. Plus, with up to 8 channels audio support, 7.1 channel or 5.1 channel audio becomes available. The HDMI2HD provides two low jitter SDI outputs for daisy chain or for connecting multiple monitors.

FEATURES

- Input support  for HDMI Deep Color
- Support for HDCP
- Output support for 3G-SDI formats(SMPTE 425M, Level A): 1080p @50/59.94/60Hz (4:2:2)
- Output support for high-definition (HD-SDI) formats: 1080i @50/59.94/60Hz, 720p @50/59.94/60Hz
- Output support for standard-definition (SD-SDI) formats: NTSC @59.94Hz, PAL @50Hz
- Bit Rates for 2.97 Gbps, 2.967Gbps, 1.485 Gbps, 1.4835 Gbps, 270 Mbps
- Auto 3G/HD/SD-SDI detection
- Easy installation with wall mounting design
- Supports up to 8 channels of audio, 7.1 or 5.1 optional
- Low jitter
- Re-clocked outputs for looping SD/HD/3G SDI signals

| Part number | Description |
|---|---|
| PRO-HDMI2HD | Conversion module to convert HDMI to SD-SDI, HD-SDI, and 3G-SDI |

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# Chapter 1 ABOUT YOUR PRO-HDMI2HD PRODUCT

## 1.1 DESCRIPTION

PESA's PRO-HDMI2HD is a throw-down style converter module allowing HDMI in 480p, 720p, or 1080p to SD-SDI, HD-SDI, or 3G-SDI video signals to be viewed or recorded to a professional broadcast device supporting SMPTE 259, 292, or 424. The supplied power brick accepts a primary power input of 100-240V, 50/60Hz, and supplies a +5V DC output. Power consumption is less than 3 watts.

Each PRO-HDMI2HD module sends output signals through a standard 75 Ohm BNC connection. Destination devices can be located up to 300m (1000ft) for SD-SDI, up to 150m (500ft) for HD-SDI, and 90m (300ft) for 3G-SDI.

The compact package comes with two mounting tabs for easy attachment to wall or under-the-table locations.

**FIGURE 1-1: PESA PRO-HDMI2HD Module**

## 1.2 CONNECTING INPUTS

Each PRO-HDMI2HD supports one HDMI input from a DVD player or computer. The input allows for an HDMI Type A connector (19 pin).

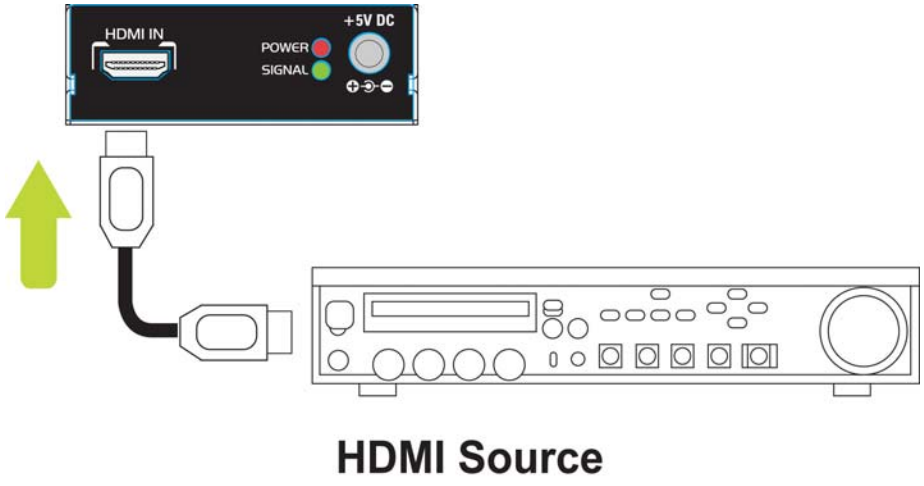


**FIGURE 1-2 : PESA PRO-HDMI2HD Input Connections in HDMI Type-A Style**

## 1.3 CONNECTING OUTPUTS FOR SD, HD, 3G FORMATS

Each PRO-HDMI2HD allows one 75 Ohm input supporting SD/HD/3G inputs. Devices can be connected up to 300m (SD-SDI), 150m (HD-SDI), and 90m (3G-SDI).

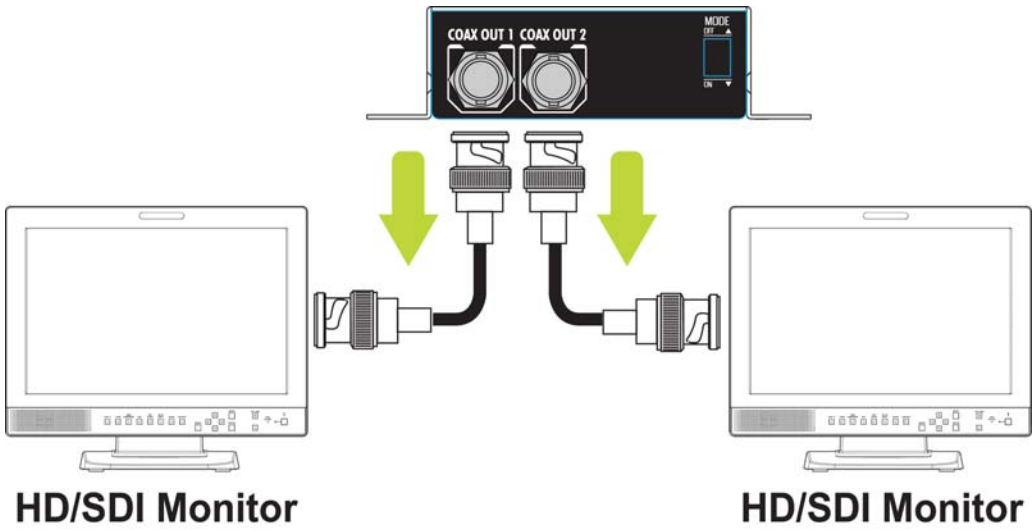


**FIGURE 1-3 : PESA PRO-HDMI2HD Allows up to Two Re-clocked Outputs for SMPTE 259, 292, 424**

## 1.4 CONNECTING POWER TO THE PRO-HDMI2HD

Connect the supplied power pack to the +5VDC connection on the module. Once power is applied, the RED power led should be lit. Once a signal has been detected, the GREEN led will be lit. Hand tighten the screw-lock to get a snug connection. DO NOT OVER TIGHTEN.

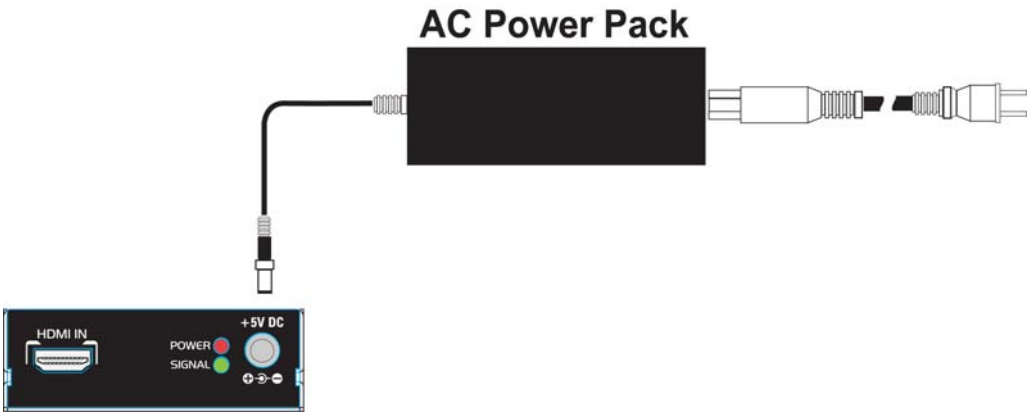


**FIGURE 1-4: PESA PRO-HDMI2HD Power Supply Connection**

# Chapter 2 Installing your PRO-HDMI2HD

With all input and output devices and power connected, the following diagram provides a typical full detail of module installation. There are not software, but a two pin dip switch is included for special EDID settings.

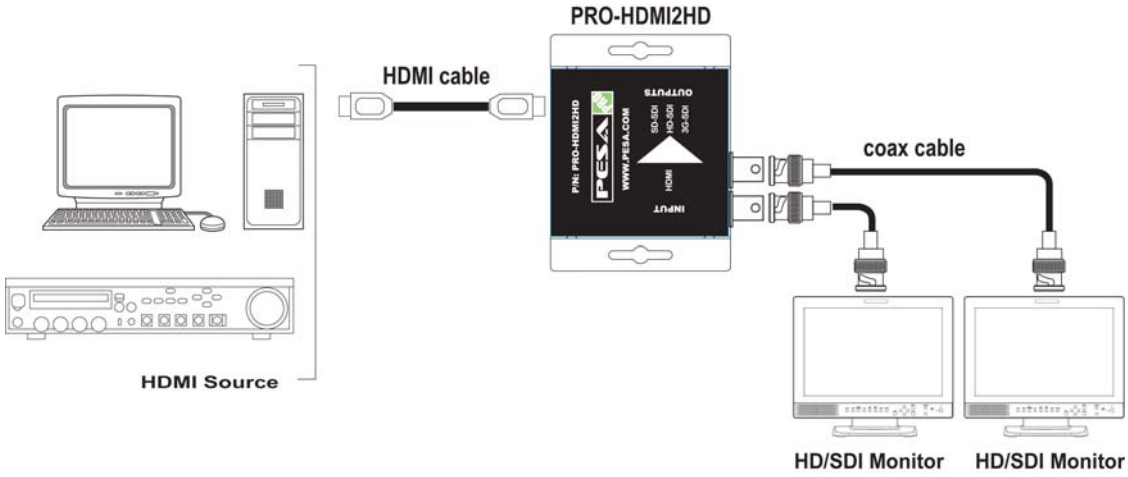


**FIGURE 2-1: PESA PRO-HDMI2HD Full Connection Detail**

## 2.1 SUPPORTED RESOLUTIONS

| **3G-SDI INPUTS** | |
|---|---|
| 1080p@ 50 / 59.94 / 60Hz | SMPTE 424 / 425 (4:2:2) |
| **HD-SDI INPUTS** | |
| 720p @ 50Hz | SMPTE 296 -3 |
| 720p @ 59.94 / 60Hz | SMPTE 296 -1, -2 |
| 1080i @ 25Hz | SMPTE 274 -6 |
| 1080i @ 29.97 / 30Hz | SMPTE 274 -4, -5 |
| 1080p @ 23.98 / 24Hz | SMPTE 274 -10, -11 |
| 1080p @ 25Hz | SMPTE 274 -9 |
| 1080p @ 29.97 / 30Hz | SMPTE 274 -7, -8 |
| **SD-SDI INPUTS** | |
| 480i @ 29.97 / 30Hz | NTSC |
| 576i @ 25Hz | PAL B, D, G,H, I |

## 2.2 CABLE LENGTHS – MAXIMUM DISTANCES AND CONNECTION TYPE

Defining the types of signals and connection styles

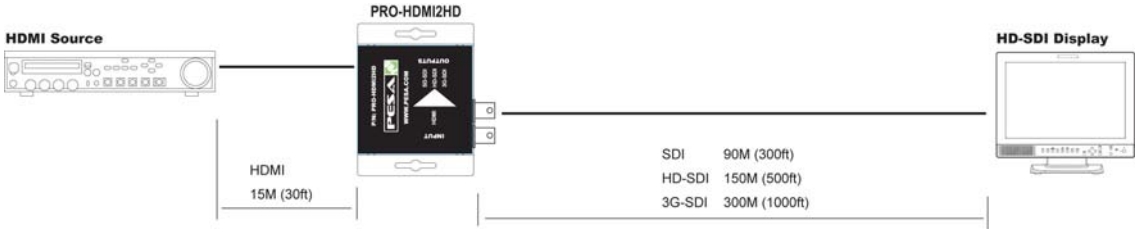


**FIGURE 2-2: PESA PRO-HDMI2HD Cable Connections and Maximum Lengths**

## 2.3 DIP SWITCH SETTINGS – SETTING DIP SWITCH SETTING FOR AUDIO AND EDID LEARNING

Each PRO-HDMI2HD comes with a two pin dip switch allowing special EDID settings for specific audio support and EDID learning.

| PIN #1 | PIN #2 | EDID Feature |
|---|---|---|
| OFF ▲ | OFF ▲ | SD/HD/3G with multi-channel audio except DTS-HD & Dolby True HD |
| ON ▼ | OFF ▲ | SD/HD with stereo PCM audio |
| OFF ▲ | ON ▼ | SD/HD/3G with stereo PCM audio |
| ON ▼ | ON ▼ | EDID learning mode |

**FIGURE 2-3: EDID Switch Settings**

**EDID Learning Sequence**

- **Set PIN #1 and PIN #2 DIP Switch to ON/ON**
- **Connect an HDMI device to the HDMI port**
- **Power on the PRO-HDMI2HD module**
- **The RED led light will illuminate indicating the EDID learning process is complete**
- **Connect SD/HD/3G coax cables to the output sources**
- **NOTE: DO NOT CHANGE SWITCH SETTINGS. OTHERWISE EDID INFORMATION WILL BE LOST.**

# Chapter 3 Maintenance and Repair

## 3.1 PERIODIC MAINTENANCE

No periodic maintenance is required.

## 3.2 PESA CUSTOMER SERVICE

If you are experiencing any difficulty with your PRO-HD2HDMI product, please contact PESA's Customer Service Department. Skilled technicians are available to assist you 24 hours a day, every day of the year.

## 3.3 REPAIR

Before attempting to repair this equipment, please consult your warranty documents and PESA's Customer Service Department. Unauthorized repairs may void your warranty.

| | |
|---|---|
| | **PC boards in this equipment contain Surface Mount Technology (SMT) components. Special tools and skills are required to replace these components without causing damage to adjacent areas.**<br>**Failure to consult with Customer Service before attempting to repair these boards may void your warranty.** |

## 3.4 REPLACEMENT PARTS

Only parts of the highest quality are used in the design and manufacture of this equipment. If the inherent stability and reliability are to be maintained, replacement parts must be of the same high quality. Please consult our Customer Service Department before installing any parts not purchased from PESA.

## 3.5 FACTORY SERVICE

Before returning any equipment to PESA for service or repair, please contact our Customer Service Department for an RMA number.

# Chapter 4 Specifications

| | |
|---|---|
| **OUTPUT (SMPTE)** | |
| Number of Outputs | 2 |
| Connector Type | BNC, 75 Ohm |
| Standards | SMPTE 259, 292, 424 |
| Video Bandwidth | 2.97 Gbps , 2.970/1.001 Gbps |
| Auto detect | Yes |
| Video Support | [3G] 1080p50/59.94/60 – 4:2:2<br>[HD] 720p50/59.94/60<br>[HD] 1080i 50/59.94/60<br>[HD] 1080p24/30<br>[SD] NTSC @59.94 and PAL @ 50Hz |
| Reclocking | [3G-SDI] up to 90m (300ft)<br>[HD-SDI] up to 150m (500ft)<br>[SD-SDI] up to 300m (1000ft) |
| Audio Support | Yes, embedded |
| **INPUTS (HDMI)** | |
| Number of Outputs | 1 |
| Connector Type | HDMI, Type A (19 pin female) |
| Standards | HDMI 1.4 |
| Cable connection distance | 15m |
| **ENVIRONMENTAL** | |
| Housing Dimensions | 79mm x 84mm x 27mm<br>3.1 x 3.3 x 1.2 inches |
| Weight | 250g (8.8 oz) |
| Operational Temperature | 0-40 degree C |
| Operational Humidity | 20-90% RH (non-condensation) |
| Power Connection | +5VDC ( inter-locking power plug) |
| Power Consumption | 3W (max) |
| AC Power Brick | 100-240VAC, 50/60Hz |

# Chapter 5 Warranty

PESA Switching Systems, Inc., (PESA) warrants this equipment against defective workmanship or materials for a period of one (1) year from date of shipment. The sole warranty responsibility of PESA, shall be to replace or repair product proved to be defective. During the warranty period, defective parts will be replaced at no charge. Labor to repair or replace defective parts covered under the warranty will be performed at no charge at PESA. This warranty covers only products manufactured by PESA, and the components used in their manufacture. The warranty on assembled products sold by PESA., but manufactured by others shall be that of the original manufacturer. This warranty does not include shipping damage or damage caused by abuse, neglect, tampering by unauthorized personnel, damage inadvertently caused by the user, preventative maintenance, or any equipment or part thereof whose serial number has been removed or defaced. Neither the seller nor the manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the inability to use the product. Before using, user shall determine the suitability of the product for the intended use, and user assumes all risk and liability whatsoever in connection therewith. This warranty is effective only at the PESA factory in Huntsville, Alabama, USA. If possible, retain the original packing material for use in the unlikely event that your equipment must be returned to the PESA factory. When shipping your equipment, the shipping charges must be prepaid. The repaired unit will be returned to you, freight prepaid. This warranty is exclusive and in lieu of all other warranties, whether expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose.

PESA